

# Open Source Six Sigma

## Lean Six Sigma White Belt



MANUAL  
LSS LEADERSHIP SERIES

Second Edition



# LSS White Belt

---

Second Edition: Manual



OPEN SOURCE SIX SIGMA

An Open Source Six Sigma Publication

6800 East Thomas Road Suite 203

Scottsdale Arizona 85251

Toll Free: 1 800 504 4511

Intl: 1 480 270 8428

OSSS@opensourcesixsigma.com

Lean Six Sigma White Belt Manual v11

Copyright, 2007 by Open Source Six Sigma. All rights are reserved. Individual Copy. No portion of these materials may be reproduced, transmitted, stored in a retrieval system or translated into any language in any form or by any means without the prior written permission of Open Source Six Sigma.

## Table of Contents

---

	Page
<b>Introduction</b>	
Competition.....	4
Course Overview.....	5
Course Objectives.....	6
Team Work.....	7
<b>Process Management</b>	
Definitions.....	9
Process Architecture.....	11
Cost of Poor Quality.....	22
<b>Lean Principles</b>	
Lean Principles Definitions.....	28
Seven Areas of Waste.....	29
Value Stream Analysis.....	32
5S Principles.....	38
Poka-Yoke Methods.....	44
<b>Six Sigma</b>	
Define Phase.....	49
Measure Phase.....	56
Analyze Phase.....	64
Improve Phase.....	79
Control Phase.....	90
<b>Glossary</b> .....	107

## Lean Six Sigma Course Manual

# Lean Six Sigma White Belt

Welcome to the White Belt Training Course.

This course has been designed to build your knowledge and capability to effectively serve as a Team Member with those improving the performance of processes and subsequently the performance of the business of which you are a part. The focus of the course is process centric. Your role in process performance improvement is to be through the use of methodologies like Process Management, Lean Principles and Six Sigma.

By taking this course you will have a well rounded and firm grasp of many of the tools of these methodologies. Further you will be able to apply these tools to a process you are part of as both a learning experience and a chance to improve the way your work gets done. We firmly believe this is one of the most effective classes you will ever take and it is our commitment to assure that this is the case.

## Introduction

### Competition



**Serious Competition!**

Every morning in Africa, a gazelle wakes up; it knows it must run faster than the fastest lion or it will not survive.

Every morning in Africa, a lion wakes up; it knows it must outrun the slowest gazelle or it will starve.

**It doesn't matter whether you are a lion or a gazelle: When the sun comes up, you had better be running!**



Whether you like it or not, competition is a fact. Historically, if you had an “ok” business, you were assured that you would continue to stay in business.

Over the past twenty years, this has changed significantly. Because of advances in communications, computing and transportation technologies, the consumer has a wide variety of choices for their purchases. People and companies will always seek out the lowest price, highest quality and best customer relationship combinations that exist.

A company that understands the behavior of its processes is able manage it processes better, manage the company better and therefore is more competitive. This is a fundamental fact many companies have known for years, yet it has only been over the past several years they are starting to do something significant about it. Whether you are a gazelle or a lion, you better be running as fast as you can if you want to survive in today's economy.

# Introduction

## Course Overview

As already stated, this course has been developed to enhance the knowledge and capability of people involved in the daily operations of business processes. It has been our experience that conducting a process improvement project while learning always make the work effort easier for the participants and in many cases saves money, frequently a significant amount of money.

### Course Purpose

This course has been developed to enhance the general knowledge and provide some capabilities in the arena of Lean Six Sigma for people involved in the daily operation of business processes and in Process Improvement Teams.

### Course Goal

The goal of this training is to:

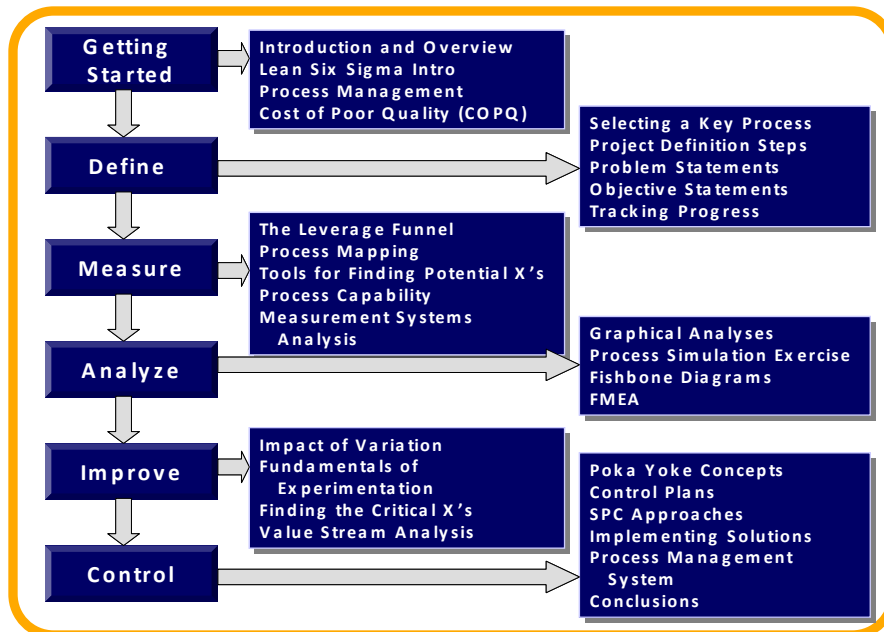
- Increase your knowledge of Lean Six Sigma techniques as business process improvement methodologies.
- Increase your skills at improving the ease and performance of the processes in which you work.
- To gain an understanding of your role as a process team member for the achievement of business success.

### Personal Results

After successfully completing this course you will have enhanced your knowledge of process functionality, analytical skills, problem solving skills and methods for increasing the efficiency, effectiveness and adaptability of the process you are involved in and your own work efforts.

Also, we suggest you pick a project in your area of work to apply the skills you will be learning with this course. We have found this approach to be a far better method of learning and retaining the knowledge. Additionally, you will improve something in your work area and receive a huge increase in pay (we hope).

## Learning Road Map



# Introduction

---

---

## **Objectives for You as a Participant**

- 1. Obtain a working understanding of Lean Six Sigma**
  - Know and apply the basic concepts
  - Demonstrate use of the terminology
  
- 2. Comprehend daily work as a process-oriented activity**
  - Understand process inputs and outputs
  - Understand process flow and know what determines value add vs. non value add
  
- 3. Understand how the processes you are a part of fit into the larger set of processes needed in delivering value to the customer**
  - Perform process mapping and characterization
  - Create a detailed process map of a process you are personally involved in
  - Prioritize significant outputs and quantify their level of performance to requirements
  - Identify inputs and their relationship to the significant outputs
  
- 4. Perform process improvement activities**
  - Improve a process you are involved in using Lean Six Sigma methods
  - Continue to improve other processes
  
- 5. Establish control mechanisms and monitoring processes to sustain an existing process and/or any improvements you make.**

We have established stated objectives for you as a participant.

This class is designed as an applied learning experience we sometimes refer to as “Train – Do”. You will be taught how to identify and select a key process you are involved in and then how to fully characterize this process. You will find that the characterization activity will naturally lead to improvement. In most cases the improvement results in increased performance of the process and your ease in performing or supporting the process. You will also learn how to maintain or sustain the performance of a process by either monitoring or applying specific control techniques. From here you will be well equipped to make improvements to almost any process.

# Introduction

## ***Team Work as a Process Member***

### **Team Work**

**All team members contribute to the success of a process and to any improvement effort**

**When you are part of a process team, commit yourself to being part of the team's success:**

- a) Actively participate on the team
- b) Stay focused on the functionality of the process and any efforts to make improvements
- c) Encourage others when they do well
- d) Politely speak out when you disagree, and remember to have data
- e) Help the team to make the process the best it can be, learn the improvement techniques from Process Management, Six Sigma and Lean techniques.
- f) Follow through on your commitments

**Go Team!!**



Process improvement works best as a team effort. You can make improvements by yourself but you can make larger improvements with a team, all process members can contribute as a team to the success of a process and an improvement effort. When you are a part of a process team, commit yourself to being a part of the team's success by actively participating, staying focused on the process and the improvement efforts, congratulating and encouraging others when they do well, constructively speaking out when you disagree by using data to substantiate your position, by using the tools and techniques of process improvement and by following through on your assignments and commitments. You will certainly be rewarded for your efforts.

## ***Defining Lean Six Sigma***

### ***So, what is Lean Six Sigma?***

***At a high level, Lean Six Sigma is an approach to improving the performance of your company through the practice of the disciplines of Lean and Six Sigma.***

#### **Lean:**

The application of principles whose objective is to eliminate WASTE while improving process flow to achieve speed and agility at lower cost.

#### **Six Sigma:**

The application of principles whose objective is eliminate DEFECTS and VARIATION. (We will see later why Variation is bad... very, very bad!)

**When combined and effectively applied, major improvements are achieved in business performance.**

These principles are applied through a system frequently called Process Management.